Reducing the Role of Prosody:
Plural Allomorphy in Pennsylvania Dutch

Rose Fisher, Katharina S. Schuhmann, and Michael T. Putnam

1. Introduction

Pennsylvania Dutch (PD) is a Germanic language spoken in the United States and Canada. Standard German (SG), a distant cousin descended from a common ancestor, shows a strong tendency for nominal plurals to end in a word-final, syllabic trochee (e.g., Wegener 1999; Wiese 2000, 2001, 2009; Salmons 2012; Smith 2020). Only a few studies have investigated the status of plural morphemes in PD (e.g., Reed 1948; Fuller 2000); however, none of these previous studies examines the role of prosody. We examine to what extent a specific dialect of PD conforms to this trochaic pattern in its plural allomorphy. This study used a well-formedness judgment task and a Wug test (Gleason 1958) to test whether trochaic plural forms are more licit than non-trochaic forms to PD speakers. Our results suggest that PD shows some adherence to the trochaic template, though less strictly than SG.

This paper will adopt the following structure: In Section 2 we introduce the PD language and provide a cursory overview of its system of plural allomorphy. Here we also discuss the role of the trochaic template in SG and other German varieties. We provide and describe the methods of our data elicitation in Section 3, describe the results of our experiments in Section 4, and conclude with a discussion of our results in Section 5.

2. Background

2.1. Pennsylvania Dutch

PD is a Palatinate-based Germanic language that has existed in North America for over 300 years. Today it is spoken mostly by conservative Anabaptist groups such as the Old Order Amish and Mennonites, who maintain some degree of separation from mainstream society by refusing to use many new technologies (e.g., using horse and buggies for transportation) in many aspects of their personal lives. These groups commonly use PD for all in-group communication purposes except for some aspects of their religious services for which they use a form of archaic High German (Louden 2016; Keiser 2012). PD is spoken throughout the United States and is an umbrella term that includes many dialects which vary by group as well as by region.

2.2. Trochee Pattern in German Varieties

In spite of its diasporic existence, PD appears to maintain an inheritance of many Germanic linguistic attributes. One of them is a rich array of exponents that mark plural allomorphy. As noted above, SG in most instances requires a prosodic trochee in plural formation. Following Smith (2020), a syllabic trochee is defined as a disyllabic foot that contains a stressed-unstressed syllable sequence. Thus, in the process of plural formation in SG, singulars that are monosyllabic or end in a final stressed syllable tend to take a syllabic plural allomorph, resulting in a word-final trochee. For example, monosyllabic (1a-b) and stress-final (1c) each take a syllabic plural suffix.

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On the other hand, SG nouns that end in a word-final trochee in the singular take a non-syllabic plural suffix, thereby maintaining a word-final trochee in the plural (2a-b).

Wiese’s (2009) comparison of various German dialects demonstrates that the prosodic requirement for a word-final trochee plays a differing role in each of their respective plural formation systems. For example, Franconian and Alsatian dialects allow monosyllabic plurals and do not prioritize a word-final trochaic template. This micro-variation between German dialects raises the question of how trochee may be playing a role in the plural formation of PD.

2.3. Patterns of Plural Allomorphy in PD: An Overview

Frey (1985) presents a PD system of plural allomorphy with the exponents {-Ø}, {-e}, {-er}, {-n}, {-s}, and a stem vowel change (see also e.g., Brown & Madenford 2009). However, the PD variety described in these works is the dialect spoken by non-sectarians, who are culturally distinct from the (sectarian) Amish of Lancaster County, Pennsylvania which are of interest here.1 To our knowledge, the only grammar book that describes this particular variety is Speaking Amish by Stoltzfus (2013), in which she presents a system very similar to Frey’s (1985) and Brown & Madenford’s (2009) and also references these works in her sources.

In order to capture a preliminary distribution of productive plural allomorphy alternations in this variant of PD, we created a list of 219 singular PD words and used the intuitions of three native speakers of Lancaster Amish PD to list the plural forms.2 Based on these intuitions, we identified eight exponents, two more than listed by the aforementioned sources (2 and 7 were not previously mentioned; see Table 1). These two exponents could be considered subcategories of exponent 1 as both involve (or historically involved) addition of a {-e} allomorph. However, as they are realized in certain phonological contexts, we have included them here as separate exponents. We conjecture that these additional exponents are likely the result of more recent developments that may be unique to this PD variety and have therefore not been included in any of the previous literature.

1 Aside from anecdotal evidence, there are few measurable documented differences between sectarian and non-sectarian varieties. See Keiser (2015) for further discussion.
2 In many – though not all – cases, native speaker intuitions of the expected plural forms matched both with each other and with the forms found in Stine’s (1996) non-sectarian dictionary.
Table 1: Exponents of Plural Allomorphy in Pennsylvania Dutch.3

<table>
<thead>
<tr>
<th>Plural Allomorph</th>
<th>Singular Form</th>
<th>Plural Form</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) {-e}</td>
<td>Blumm</td>
<td>Blumme</td>
<td>flower(s)</td>
</tr>
<tr>
<td>2) *{-e} + penultimate schwa deletion⁴</td>
<td>Kessel</td>
<td>Kessle (Kessele)</td>
<td>kettle(s)</td>
</tr>
<tr>
<td>3) (Umlaut) + {-er}</td>
<td>Hemm</td>
<td>Hemmer</td>
<td>shirt(s)</td>
</tr>
<tr>
<td>4) {-n}</td>
<td>Leffli</td>
<td>Lefflin</td>
<td>teaspoon(s)</td>
</tr>
<tr>
<td>5) {-s}</td>
<td>Maemm</td>
<td>Maemms</td>
<td>mom(s)</td>
</tr>
<tr>
<td>6) {-Ø} (0)</td>
<td>Frein</td>
<td>Frein</td>
<td>friend(s)</td>
</tr>
<tr>
<td>7) *(Umlaut) + {-r}</td>
<td>Yaahr</td>
<td>Yor</td>
<td>year(s)</td>
</tr>
<tr>
<td>8) Umlaut</td>
<td>Hand</td>
<td>Hend</td>
<td>hand(s)</td>
</tr>
</tbody>
</table>

While many PD plurals are trochees (exponents 1, 2, 3, and 4 in Table 1), the trochaic requirement does not seem to condition all allomorphs (exponents 5, 6, 7, and 8). Exponent 8 undergoes fronting of the stem vowel (hereafter referred to as umlaut). Attested umlaut in the preliminary data collected include⁵:

(3) [a] → [ɛ]; [ʌ] → [ɛ]; [o:] → [ɛ]; [æ] → [ɛæ]; [ɔ] → [ɛ]; [a:] → [æ]; [y] → [i]; [œ] → [i]

Exponent 3 ({-er}) tends to be associated with neuter nouns, which can additionally have umlaut, e.g., Loch/Lech-er ‘hole-s’. Furthermore, exponent 7 ({-r}), phonetically realized as retroflex [ɹ] resembling General American English⁶ can also co-occur with a vowel shift ([a] → [o], e.g., Yaahr/Yor ‘year-s’). This exponent appears to occur only in words where the older plural form ended in /r+e/ (e.g., Yaahr-e). Exponent 5, the non-syllabic {-s} plural form, which has been reported to apply to English loanwords regardless of their prosodic shape in older non-sectarian varieties (Reed 1948; Frey 1985), does not adhere to the trochaic template in SG (Wiese 2009) or in PD. Similarly, the null plural allomorph (exponent 6) is readily applied to monosyllabic or disyllabic forms.

3. Methods
3.1. Research Questions

The primary aim of our study is to gain a better understanding of the potential role that prosodic conditions, in particular the trochaic template, play in shaping the distribution of PD plural exponency. The secondary aim of our study is to examine whether multiple speakers of this PD variety show evidence for productive, rule-based plural exponency. Here, we also test whether the exponents identified in our preliminary data (see Table 1) are representative for this PD variety. In short, the core research questions of this study are as follows:

RQ1: To what extent is plural allomorphy in PD conditioned by a trochaic requirement? Is this less prevalent than what is observed in SG?

RQ2: Besides prosody, is plural allomorphy in PD rule-based and productive? What are the productive plural allomorphs in PD?

3 Spelling of PD words in this paper follows the Buffington-Barba-Beam orthography (BBB) as found in Stine (1996) excepting cases where alternate spelling is used to show features that are unique to this variety (e.g., Yor).

4 Exponent 2 is used for disyllabic singular forms ending in a schwa-liquid combination (-el or -er): Kessel → Kesselve > Kessle ‘kettle/kettle-s’. We analyze such cases as penultimate schwa deletion rather than metathesis due to the presence of forms with an added {-e} and no deletion (Kessele) in Stine (1996).

5 These kinds of shifts in which the stem vowel is fronted are consistent with what we would expect based on the history of umlaut in Germanic (e.g., Wiese 1996).

6 Typically, PD /r/s in syllable-final position are vocalized as in SG. See Keiser (2012) for further discussion of the characteristics of /r/ in this PD variety.
Wiese (2009) has demonstrated that the trochaic template has variable influence on plural formation in German dialects, which suggests that this requirement may be reduced in PD. In the remainder of this paper, we report on initial experimental work – including an Acceptability Judgment Task (AJT) and a Wug test (Gleason 1958) – on the distribution and productivity of plural exponency in PD, with a primary focus on the role of prosody.

3.2. Participants

The AJT and Wug test were completed by 10 participants (n=10; mean age: 43; age range: 19-60), adapting the general methodology for similar work on plural allomorphy in SG (e.g., Smith, Schuhmann, & Champenois 2016; Schuhmann & Smith 2022). All participants came from Lancaster County, PA and were native speakers of the local Old Order Amish variety of PD. All are highly proficient in English. Slightly more than half of the participants are Amish and speak PD on a daily basis (n=6) while the rest are former Amish and no longer speak PD on a regular basis (n=4).

3.3. Procedure

3.3.1. Acceptability Judgment Task (AJT)

For the AJT, participants rated the relative acceptability of plural forms on a Likert scale from 1-7 (1=lowest; 7=highest). Stimuli were chosen based on the expected plural exponent, which was determined by native speaker intuition, and included existing words using each of the eight plural exponents. Only existing exponents were used, but in some cases the exponent was expected (e.g., for Disch/Disch-e ‘table/table-s’, {-e} is expected), and in some cases the exponent was unexpected (e.g., for Disch/Disch-er, {-er} is unexpected). Both expected and unexpected plural forms were presented to participants for rating with some forms adhering and others not adhering to the trochaic pattern (n=117; expected trochaic=22, expected non-trochaic=10, unexpected trochaic=52, unexpected non-trochaic=33). Each stimulus was presented orally in a carrier phrase, e.g., “Ee Disch, zwee Disch e, n ganzi Bunch Disch e” (“One table, two tables, a bunch of tables”) and participants were then asked to rate the plural form. The entire session was audio recorded including participants’ responses.

3.3.2. Wug Test

For the Wug test, participants were asked to give the plural form of nonce words (n=87; monosyllabic=50, disyllabic=37) which were all singular forms. The nonce words adhered to the phonotactics of existing PD words and were designed to elicit all eight exponents of plural formation found in this variety of PD. The nonce words were also presented orally in a carrier phrase, e.g., “Ee Hehk, zwee ____” (“One [nonce word], two ____”). Participants were asked to fill in the blank. The entire session was audio recorded including participants’ responses.

4. Results

4.1. Acceptability Judgment Task (AJT)

A subset of the data demonstrates adherence to the trochaic template. The stimuli belonging to the expected {-e} exponent received a mean rating of 6.87 (e.g., Blumm-e ‘flower-s’). Stimuli that took the {-e} exponent in our preliminary data but were presented with the unexpected albeit still trochaic {-er} exponent (e.g., Blumm-er ‘flower-s’) in our AJT received a mean rating of 4.91. When they received the unexpected and non-trochaic {-s} (e.g., Blumm-s ‘flower-s’), words belonging to the {-e} exponent had a mean rating of 3.35 (see Figure 1). The results were very similar for the {-er} exponent (see Figure 2). The expected trochaic {-er} (e.g., Hemm-er ‘shirt-s’) received a mean rating of 6.40. The unexpected but still trochaic {-e} (e.g., Hemm-e ‘shirt-s’) received a mean rating of 5.00. Lastly, the unexpected and non-trochaic {-s} (e.g., Hemm-s ‘shirt-s’) received a mean rating of 3.65. In these cases, there is a clear preference for a trochaic pattern even when an unexpected plural form is used.
Figure 1: Mean Acceptability Judgment Ratings of the {-e} Exponent (n=18).

Figure 2: Mean Acceptability Judgment Ratings of the {-er} Exponent (n=6).

Turning to the overall results of the AJT, this preference for trochee is still observable (see Figure 3). Expected trochaic forms earned a mean rating of 6.60 across all the exponents. Unexpected forms that still adhered to the trochaic template received a mean rating of 4.33. Unexpected non-trochaic forms received a mean rating of 3.76. However, a fourth group for which the expected plural exponent did not adhere to the trochaic template, also received a mean rating of 6.60. This group included mostly umlaut plural forms (e.g., Hand/Hend ‘hand-s’) but also one case of a monosyllabic zero plural (Frein-Ø ‘friend-s’) and one case of a monosyllabic {-s} plural (Schaal-s ‘shawl-s’) and show that the overall rating was not lower due to being non-trochaic. Given that non-trochaic but umlaut plural forms have such a high acceptability rating, we conclude that a trochee requirement plays a reduced role when plural forms are marked with umlaut. {-s} plurals and zero plurals also do not show a strong tendency to abide by this requirement.
This assertion that umlaut takes precedence over the trochee requirement is further supported by zooming in on the items for which an umlaut was the expected form (e.g., *Baam/Beem ‘tree-s’*; see Figure 4). For these cases, the mean rating was 6.95. For the cases where umlaut was combined with an unexpected trochee {-e} (e.g., *Baam/Beem-e ‘tree-s’*) or {-er} (e.g., *Baam/Beem-er ‘tree-s’*) the mean ratings were 4.48 and 3.77 respectively. When {-e} (e.g., *Baam/Baam-e ‘tree-s’*) and {-er} (e.g., *Baam/Baam-er ‘tree-s’*) were used with no umlaut the mean ratings were 2.53 and 2.40 respectively, receiving the lowest ratings despite being trochaic. When {-s} was used with no umlaut (e.g., *Baam/Baam-s ‘tree-s’*) the mean rating was 2.80. These results affirm what native speaker intuitions from our preliminary analysis implied: the presence of an umlaut is indispensable while the trochee requirement plays no role in these cases where an umlaut is realized as the expected form.
4.2. Wug Test

Each of the 10 participants were asked to provide the plural forms for 50 monosyllabic and 37 disyllabic singular nonce words. Some productions were the plural forms of existing words, probably produced because participants misheard the stimulus and understood it as an existing word. After excluding these productions (n=28) along with cases that were accidentally skipped (n=6), there were 472 plural forms produced for the monosyllabic group and 364 plural forms produced for the disyllabic group resulting in a total of 836 plural productions.

The plural markers produced in the Wug test were quite diverse and represented all eight exponents found in our preliminary analysis of this variety (see Figure 5). Many productions were also produced that are not found in PD such as /-en/ (Jeh-en) and /-es/ (Lutz-es). Unexpected plural forms such as these were produced by all but one participant. All productions were categorized by suffixal exponents. Productions that were pluralized with a suffix that does not exist in PD were grouped into the “other” category. There were also cases where umlaut was combined with an unexpected exponent such as the one that is attached to diminutives {li+n} (e.g., Gatzli/Getzli-n). Such cases were grouped by suffix and not by umlaut meaning that Getzlin was placed into the {-n} exponent.7

In addition to being produced in unexpected contexts, there were also some vowel changes that were not fronting and are not included in the list of expected umlaut shifts in Section 2.3. (e.g., [a] \( \rightarrow \) [u] as in Datz/Dumplings). There may also have been some oddities due to mishearing the stimuli (e.g., [e:] \( \rightarrow \) [ı] as in Hek/Hickle). Productions using only umlaut with no suffix were grouped, like the “other” category, according to whether they were monosyllabic or disyllabic. Syllability status can primarily be determined by whether the suffix is (non)syllabic.

There were some cases (n=51) for which a syllabic plural marker (e.g., {-e}, {-er}, or unexpected /-es/) were used to pluralize disyllabic nonce words that already ended in -e or -er (e.g., Kaschter/Kascht-e). These suffixes replaced the -e or -er in the singular form leaving the plural production trochaic. Cases such as these were simply grouped into the plural exponents based on the plural form (Kascht-e was placed into the {-e} group).

Aside from demonstrating the overall diversity of the Wug test results, Figure 5 also shows that {-e} + Deletion (exponent 2) was very uncommon accounting for only 1% of plural formations in the category of disyllabic singualrs. Zero plurals were more common than expected accounting for 15% of the monosyllabic and 13% of the disyllabic stimuli. Zero plurals were used by some participants quite often (e.g., n=56 of 83 or 67% for Participant 7) and by others not at all (e.g., n=0 for Participant 1) leading us to conclude that they are more tolerable for some speakers than for others. The use of zero-plurals does not seem to depend on speakers’ use of PD, as both speakers who use PD regularly and those who do not produced zero plurals. Umlaut accounted for a greater percentage of plural productions than expected (17% of monosyllabic and 1% of disyllabic plurals in the case of monosyllabic singualrs).

7 It is noteworthy that {-li+n} (the combination of the diminutive morpheme and its plural allomorph) was also used to pluralize some singular forms (n=45) aside from the 10 stimuli that already contained the diminutive morpheme {-li} which indicates that diminutives are somewhat productive. Future research could seek to shed some light on the implications of this tendency for the role of diminutives in the noun phrase.
Each produced plural form was also coded by syllable structure as either monosyllabic or disyllabic. 96% of disyllabic singulars remained disyllabic (e.g., Fasser/Fesser) in the plural forms with only 4% becoming monosyllables (e.g., Fasser/Fess). This makes sense assuming that there is a preference for a trochaic pattern at play. Interestingly, 66% of monosyllabic singulars remained monosyllabic in the plural form (e.g., Zapp/Zepp) while only 34% of them became disyllabic (e.g., Zapp/Zappe) via the use of a syllabic plural exponent. This shows that disyllables are likely to remain disyllables, but monosyllables are also surprisingly likely to remain monosyllables in non-adherence to the trochee requirement.
5. Conclusions/Discussion

Returning to our primary research questions introduced in Section 3.1, we sought to determine the role of a prosodic trochaic template, in the formation of PD plurals. To test this, we developed two tasks, (i) an Acceptability Judgment Task (AJT) and (ii) a Wug test, to examine the role of the trochaic template in plural formation, and, more generally, the distribution of plural exponency in PD based on native-speaker intuition (building on Frey (1985)).

Both the AJT and the Wug test data confirm that a trochaic template does shape plural formation in PD to some degree. Exceptions to the trochaic pattern are found with (i) the {-s} exponent, (ii) zero plurals, and (iii) umlauted -stems. When comparing between different unexpected forms, the trochaic forms were preferred over non-trochaic ones. The results of the Wug test show a preference for trochees with a high number of trochaic plural forms; however, the produced plural forms also include a surprisingly large number of non-trochaic forms. Overall, we conclude that the trochaic template is present for at least half of all environments (RQ1), although it is not as prominent as found in SG plural formation. For RQ2, participants’ high acceptability ratings of plural forms provided in the AJT and the production of items belonging to each exponent in the Wug test confirm that all the exponents identified in our preliminary data (and listed in Table 1) exist in this PD variety.

There are numerous factors that could play a role in plural formation but are not addressed here, due primarily to lack of space. While variation was expected, the forms produced in the Wug test were extraordinarily diverse, differing between and within participants. This could be due both to linguistic factors and to extra-linguistic factors such as participant sex, age, occupation, membership in the Amish community, changes due to language disuse, etc. Although the number of participants in this study are simply too few to make any sweeping generalizations, future work will seek to deliver more robust results.

Finally, returning to linguistic variables that play a role in plural formation, the next step in the research on plural formation in PD – and the lexicalization of number distinctions more generally – will aim to include factors such as (but not limited to): (i) grammatical gender, (ii) phonological shape (i.e., phonotactics), (iii) lexical specification, (iv) the avoidance of homophony, and (v) contact with English in advancing our understanding of the continuing development of PD.

References


